

SHORT COMMUNICATION

EFFECT OF FERMENTED (BUTTER MILK) FOOD ON FIBRINOLYTIC ACTIVITY

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Summary: Effect of one day fermented milk (butter milk) was studied in 18 medical students between 18 to 20 years of age. Results showed that there is a significant decrease in fibrinolytic activity two hours after giving butter milk and the effect persists even at the end of six hours.

Key words: fermented food fibrinolytic activity

INTRODUCTION

Fibrinolysis is the process by which the protein fibrin formed during clotting of blood is degraded enzymatically. Fibrinolysis is very important especially during recovery from different thromboembolic diseases. Recently effects of several factors affecting fibrinolytic activity are studied (1,4,5,6,7).

According to R. Fearnley and Jon Ferguson (3) beer reduces the fibrinolytic activity of the blood. They have shown that whisky absolute alcohol and other distilled liquors have no appreciable effect. But white wine cidar and other fermented alcoholic products have similar effect as beer. Therefore they have suggested that some substance produced during fermentation may be responsible for reducing fibrinolytic activity. In India many fermented products like butter milk, idli and dhokla are used as daily food articles. The present study was undertaken to see whether such commonly used food product like butter milk can exert similar effect. The effect of butter milk prepared by one day fermentation of milk was studied.

MATERIALS AND METHODS

1) Skimmed milk powder 75 *gms* each for 1st group of nine individuals and 50 *gms* for other group of nine individuals, 2) Phosphate buffer of pH 7.4, 3) Thrombin solution (50 units per *ml*) in saline and 4) Sterile glasswares.

Dilute blood clot lysis method described by G.R. Fearnley (2) was used. Experiment was done in two groups of 9 medical students of 18 to 20 years of age in each group. Control was done by giving milk prepared from skimmed milk powder on one day. The butter milk prepared from same amount of milk powder (fermented for 24 hrs) was given on the second day. Each individual acted as his own control. For first group quantity of skimmed milk powder used was 75 gms and that other group 50 gms. In first group effect of milk was studied on 1st day and effect of butter milk on the second day. In second group procedure was reversed.

Four blood samples were taken from each individual each day. First fasting sample, second sample two hrs, after giving food (milk or butter milk), third sample four hours after giving food and fourth sample six hours after giving food.

RESULTS

Results showed that on control day fibrinolytic activity increases in the third and fourth sample as compared to fasting sample. Probably this is due to diurnal variation in fibrinolytic activity. On the other hand decrease in fibrinolytic activity was seen in all the three samples collected after giving butter milk. Effect was maximum in the third sample. Changes in fibrinolytic activity in the third sample are therefore given in Table I and II. There is no significant difference in results by changing quantity of milk powder from 75 gms to 50 gms.

TABLE I: First group with 75 gms of milk powder.

<i>Effect of milk clot lysis time</i>					<i>Effect of butter milk clot lysis time</i>				
<i>Fasting</i>		<i>3rd sample</i>		<i>Diff. in mins</i>	<i>Fasting</i>		<i>3rd sample</i>		<i>Diff. in mins</i>
<i>Hrs</i>	<i>Mins</i>	<i>Hrs</i>	<i>Mins</i>		<i>Hrs</i>	<i>Mins</i>	<i>Hrs</i>	<i>Mins</i>	
5	—	4	—	60	4	—	5	10	70
4	8	4	7	1	4	—	5	27	87
4	41	4	25	16	4	5	5	—	55
4	—	3	55	5	4	5	5	35	90
3	50	3	35	15	3	45	4	50	65
4	35	4	12	23	4	20	5	27	67
4	25	3	30	55	3	30	5	23	113
4	30	4	3	27	4	20	5	10	50
4	50	4	20	30	4	10	5	30	80
<i>Mean in minutes</i>		<i>SD</i>	<i>SE</i>	<i>P</i>	<i>Mean in minutes</i>		<i>SD</i>	<i>SE</i>	<i>P</i>
25.8		20.3	6.78	<0.01	75.2		19.5	6.5	<0.001

Result: There is significant increase in fibrinolytic activity of the third sample.

Result: There is significant decrease in fibrinolytic activity of the third sample.

TABLE II: With 50 gms of milk powder.

With milk clot lysis time of					With butter milk clot lysis time of				
Fasting Hrs	Min	3rd sample Hrs	Mins	Diff. in mins	Fasting Hrs	Mins	3rd sample Hrs	Mins	Diff. in mins
4	15	3	45	30	3	40	5	17	97
4	8	3	33	35	3	55	4	48	53
4	11	3	40	31	4	10	5	18	68
4	0	3	35	25	4	5	5	23	78
4	0	3	45	15	4	8	5	0	52
4	5	3	45	20	4	5	5	20	75
4	0	3	45	15	4	5	5	25	80
4	5	3	50	15	4	7	4	30	83
4	0	3	45	15	3	55	5	5	70
<i>Mean</i>	<i>SD</i>	<i>SE</i>	<i>P</i>		<i>Mean</i>	<i>SD</i>	<i>SE</i>	<i>P</i>	
22.3 minutes	8	.67	< 0.001		66.2 minutes	21.3	7.1	< 0.001	

Result: There is significant increase in fibrinolytic activity of 3rd sample.

Result: There is significant decrease in fibrinolytic activity of the 3rd sample.

DISCUSSION

Commonly used fermented product such as butter milk also causes inhibition of fibrinolytic activity. Whether this effect is direct depressing effect on blood fibrinolytic activity or indirect effect due to decrease in coagulability of blood is not yet known. Further study is therefore required to know its exact clinical significance.

CONCLUSION

There is a significant decrease in fibrinolytic activity after giving butter milk. Probably some product of fermentation causes this effect. Further study is required to know the clinical significance of this observation.

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